Appendix E: Supplemental Environmental Analysis

Alternative B – Proposed Action was modified in response to public and Tribal concerns. This modification will leave Forest Road 2703 in a closed state (Maintenance Level 1), and it will be retained on the official road system to allow for funding opportunities to repair and upgrade this road. Yet, as discussed in pages 4, 39, and 52-53 of the Environmental Assessment (EA), there is an immediate need to stabilize Forest Road 2703 to prevent further damage to aquatic, soil, and riparian resources. This modification of Alternative B (hereafter called, Alternative B, With Modifications) will include road treatments to stabilize and store this road. These treatments will include the following activities:

- Currently failing road shoulders will be stabilized by removing a total of approximately 1,000 feet of cracking road fills from mile posts (MP) 3.60, 3.71, 3.78, 3.86, 4.41, 4.51, and 6.09. This fill material will be removed and placed at a stable location so that it is no longer able to be transported into Circle Creek or any water resource.
- Approximately 75 culverts currently located in the road will be removed and replaced with rock-lined dips to retain effective drainage of the road and minimal maintenance needs. Of these culverts to be removed, 38 culverts are of small diameter (18-24") and provide drainage to ditches, swales, and intermittent drainages. The remaining 37 culverts are of larger diameters (3' – 6') and provide passage of flows on perennial, non-fish bearing streams.
- 5 fords will remain intact.
- Install intermittent rock dips or water bars as needed between exiting culvert locations to help dissipate runoff more efficiently and quickly as needed. Amount required will be field-determined based on road grade and distance between each existing culvert location.
- Treat existing log crib retaining walls by placing compacted fill material in front of and along side of the retaining wall to provide stability to the structures.
- Utilize rock cut slopes along top section of road for riprap material use on individual sites as necessary.

As a result of the modification to Alternative B – Proposed Action described above, the following resources required no additional analysis, and thus resource effects remain as disclosed in the EA (Ch. 3, pp. 34-111), and individual Specialist Reports filed in the Project Record: Hydrology, Fish, Wildlife, Forest Vegetation, Recreation, Visual Quality, Wild and Scenic Rivers, and Fire resources.

The following resources required additional analysis, which is included in this Appendix and filed in the Project Record: Soils, Botany, Heritage and Treaty Resources, and Road Infrastructure.

Soils – Supplemental Analysis

The treatments described in Alternative B, With Modifications, require additional analysis for the Soil Productivity and Displacement and Riparian Reserves indicators.

Soil Productivity and Displacement

Alternative B, With Modifications

Soil productivity would gradually recover on obliterated roads at a faster rate than under current conditions. Obliterating roadbeds would not create any additional soil compaction and displacement because excavated soil would be limited to the previously compacted and disturbed roadbed. The potential for soil displacement of the road would be reduced because unstable side-cast material at stream crossings would be moved to a more stable location. Road closure activities will only minimally improve current soil compaction and displacement conditions of affected roads, as decompaction activities would be limited to stream-crossing removals.

Reducing the extent of roads with hardened road surfaces through obliteration techniques would reduce adverse effects on soil productivity. Alternative B, With Modifications will reduce the area of compacted areas from roads in the affected subwatersheds by between 1.8 and 26 percent (**Table 1**).

Table 1. Effects of Obliterating Roads on Soil Productivity in the Suiattle ATM Project Area

Subwatershed Name (HUC_12)	Length of Compacted areas on Current System & Non-system Roads (miles)	Alternative B, With Modifications (Jan 2012)	Length of Compacted System and Non-System Road to be Obliterated (miles)	Post-treatment Improvement to Soil Productivity on Roads (%)
Circle Creek-Suiattle River (171100060303)	58.0	B & B-1	11.1	19.2%
Big Creek (171100060304)	20.6	B & B-1	5.3	26.0%
Tenas Creek-Suiattle River (171100060305)	47.2	B & B-1	1.8	3.8%
Dan Creek (171100060403)	43.9	B & B-1	0.8	1.8%

The potential for future soil displacement is higher under Alternative B – Option 1, because sidecast failures and road washouts, which may trigger additional landslides, are expected to occur along the 1.2 miles of Road 2703000 that cross unstable soils. Upgrades to and proper maintenance of drainage structures on this section of road under Alternative B – Option 1 will reduce the frequency of road washouts, but these activities cannot ameliorate the underlying unstable geologic conditions that exist in this area. Conversely, Alternative B, With Modifications will include storage treatments to stabilize 1.2 miles of road that cross unstable soils. Such treatments include stabilizing currently failing road shoulders at mile posts 3.60, 3.71, 3.78, 3.86, 4.41, 4.51, and 6.09, as well as placing compacted fill material in front of and along side of existing log crib retaining walls to provide stability to the structures. Road drainage structures will also be installed that are more stable over the long term and need minimal to no maintenance in order to reduce the likelihood of soil displacement from landslides.

Storage of the unstable sections of the 2703000 road under the Alternative B, With Modifications would provide greater protection against future soil displacement over Option 1, as well as providing an overall improvement over current conditions (Alternative A – No Action). The action alternatives would also provide the greatest benefit to soil productivity and quality within existing road prisms through the decompaction of decommissioned roads, which will be seed and mulched following treatment. These treatments will reinitiate the soil development process in these areas, allowing for a slight improvement in soil quality at the subwatershed scale.

Riparian Habitat

Alternative B, With Modifications

Approximately 5.2 miles of system road and 0.5 mile of non-system road that are located in riparian reserves will be obliterated as part of the Proposed Action (**Table 2**). These activities will allow for the reestablishment of riparian habitat by eliminating the existence of an unnatural disturbance (a road). The obliteration of roads in these riparian areas would allow for the long term population of plant, invertebrate and vertebrate riparian dependent species, leading toward the reestablishment of function in the riparian habitat. Removing culverts and pulling back fillslopes on unstable soils will eliminate or alter riparian habitat that is present within the road way, which will improve connectivity of riparian habitat.

Table 2. Length of Roads within Riparian Reserves to be Obliterated in Alternative B, With Modifications (January 2012) of the Suiattle ATM Project

Subwatershed Name (HU12)	Length of (miles)	
	System Road	Non-System Road
Circle Creek-Suiattle River (171100060303)	4.0	0.01
Big Creek (171100060304)	0.6	0.5
Tenas Creek-Suiattle River (171100060305)	0.6	0.04
Total	5.2	0.6

Mitigation Measures and Design Features

Additionally, several new programmatic permits have been developed in the past year with the State of Washington and the US Army Corps of Engineers to ensure compliance with Washington Administrative Codes and the Clean Water Act. This project will be covered by and conducted in compliance with Regional General Permit #8 (RGP-8), as established on July 19, 2011 by the Seattle District US Corps of Engineers. Additionally, the Forest Service will comply with State water laws by adhering to a revised MOU between the Washington Department of Fish and Wildlife and the US Forest Service within the State of Washington, which is currently in draft form and is expected to be signed imminently. As a result of these

new documents, Appendix B has been updated to include related mitigation measures and design features.

Botany – Supplemental Analysis

Alternative B, With Modifications proposes to "utilize rock cut slopes along top section of road for riprap material use on individual sites as necessary" (p. 1). The EA mitigation measures in Appendix B state that weeds will be treated before the road is made undriveable, and that sources of rock or fill must be either deemed weed free or treated before use.

The Botany Specialist's Report lists weed sites in need of treatment on Road 2703 at Milepost 0.7 and 4.0. In addition, during an Interdisciplinary Team field trip in the summer of 2010, engineer staff had flagged out a proposed source of rock material on Road 2703. This was inspected and approved for use by the Zone Botanist. This site-specific information would be utilized by the project administrator to implement the project design features listed in Appendix B.

Heritage and Treaty Resources – Supplemental Analysis

Heritage and Treaty Resources
Alternative B, With Modifications

Subsequent to the development of the EA, field surveys were conducted for the Suiattle ATM project in two phases: the Upgrade Roads and the Decommissioning and Storage Roads (Iversen, 2011a; 2011b). Field surveys met the requirements of the cultural resources inventory strategy established for the Forest in 1997 (Hearne and Hollenbeck, 1997) for the area of potential effects identified by the Forest Service Heritage Specialist for this undertaking. Shovel probe excavations were conducted within areas that were determined as high probability based on slope analysis and other factors that contribute to the probability for cultural resources (terraces near the main channel of the river, prominent saddles and ridges, proximity to previously recorded sites, etc.).

Several cultural resources were identified during field surveys, primarily cedar trees from which it appears the bark was stripped for basket making material. As described in the EA, most of these will be avoided by an adequate buffer during implementation of decision. One tree was identified as potentially affected; this site will be field-checked by a Forest Service Heritage Specialist prior to any work at that location to ensure that it is adequately avoided (PA, 1997 Stipulation III.B.2). In accordance with the Programmatic Agreement for management of cultural resources on National Forests in Washington (PA, 1997), a finding of "no effect" has been documented for these resources.

The Lime Creek Bridge was identified as a potential historic structure. It is a concrete bridge built in 1963 with modified post and lintel construction. The Forest Service determined that the bridge does not meet the criteria of eligibility for the National Register of Historic Places (NRHP) (36 CFR 60.4). The State Historic Preservation Officer concurred with this finding on September 21, 2011.

The Sauk-Suiattle Indian Tribe has identified the Suiattle drainage as a place for obtaining cedar bark, black huckleberries, medicinal plants and rocks used in ceremonies, as well as a place of spiritual retreats. No traditional cultural places that may qualify for eligibility for the NRHP have been identified as a result of consultation with the Tribe.

The Forest Service has reached a finding of "no historic properties affected" for this undertaking, and will proceed with the proposed action with mitigation measures identified in Appendix B of the Decision Notice.

Reserved Treaty Rights

Alternative B, With Modifications

As stated in the EA, treaty rights remain intact. The effects to reserved treaty rights are related to changes in access, as well as effects to fish, wildlife and plant resources. Alternative B, With Modifications includes treatments to road 2703 to place it in maintenance level 1 (storage). Under this alternative, the possibility that the road would be upgraded and available for use is retained. This would allow for vehicle access to the area for the exercise of treaty rights, if a funding is developed by the Sauk Suiattle Tribe or other entities. The short-term result would be the same as Alternative B – Proposed Action; no vehicle access would be available on Road 2703 past MP 1.7. The long-term result would be the same as Alternative B – Option 1; the road would be upgraded for vehicle access to MP 6.8. If funding is not developed within five years, the road will be decommissioned, and the effects would be the same as Alternative B – Proposed Action.

Effects to specific resources for which treaty rights are reserved – fish, wildlife, and plants – are discussed under the specific resource sections in the EA (pp. 50-79, 84-87).

Road Infrastructure – Supplemental Analysis

Alternative B, With Modifications

Alternative B, With Modifications, is similar to Alternative B – Proposed Action, except that it would place Road 2703 into maintenance level 1 status (storage), instead of decommissioning the road. As a result, under Alternative B, With Modifications, 27.74 miles are in maintenance level 1 (storage), and 45.9 miles are decommissioned (compared to 20.94 miles in storage and 51.0 miles decommissioned under Alternative B – Proposed Action). Under this modification, annual road maintenance cost changes from $45,845 (Alternative B – Proposed Action) to $44,739 and miles left open to the public changes from 70.53 miles (Alternative B – Proposed Action) to 68.83 miles. Alternative B, With Modifications, would further reduce road maintenance miles, thereby having a positive impact on the current and predicted Forest road budget. This alternative best matches the Regional and Washington Offices directives to reduce road miles on each Forest.